

which synthesize vitamin K, and thus upset the effect of the anticoagulant.

Further experience is, however, necessary to determine more precisely the extent to which these patients are at risk during dental surgical operations and what precautions are desirable.

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Erupted Teeth in the Newborn

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Introduction: Periodically, in the medical and dental literature, cases are reported of infants born with teeth already erupted. These are usually noticed as a result of the infant having difficulty in breast feeding. Little is known, however, of the subsequent dental history of these cases. In this communication I shall survey the relevant literature and present the information gained from the periodic dental examination of 12 such cases extending over several years.

Definition: These teeth erupted at birth have been called natal teeth by Massler & Savara (1950) who also refer to teeth erupting during the thirty days after birth as neonatal teeth. In earlier literature the terms used included congenital teeth, foetal teeth and dentitio praecox.

Historical review: Instances of infants born with teeth have been recorded from very ancient times, such as the cuneiform inscriptions found at

Nineveh (Ballantyne 1896). A seventeenth century translation of the Roman writer Pliny the Elder quotes him as follows: 'Certaine it is also that some children are borne into the world with teeth as Manius Curius who thereupon was surnamed Dentatus and Consul Papyrius Carbo, both of them very great men and right honourable personages'.

The belief that a splendid future awaited anyone born with teeth was widely held in France and Italy, possibly because this condition is reported to have occurred in such notable persons as Louis XIV, Mirabeau, Mazarin, Cardinal Richelieu, Napoleon and the anatomist Broca. Shakespeare records in his plays (e.g. Richard III, Act II Sc. 4) the tradition that the English King Richard III was born with teeth such that 'he could gnaw a crust at two hours old'.

Kanner (1928) tells that the Slavonian and Ural-Altaic tribes believe that children born with teeth will become witches or sorcerers and the Kasubians that, after death, they will rise from their graves to suck the blood from their nearest relatives. In Poland and India such children are considered monsters and bearers of misfortune (Massler & Savara 1950) and in parts of Africa they are left to die in the bush. More recently, Allwright (1958) reports from China that these teeth are considered to bring very bad luck to the family; the parents of one infant made strong claims to the tooth when extracted so that it could be deposited, together with its attendant evil spirits, in the middle of Hong Kong harbour! In case, therefore, any of these beliefs have penetrated into our localities, perhaps it is always best, as Charon (1955) advises, to 'reassure the parents'.

Incidence: The frequency of these cases is difficult to establish accurately as detailed paediatric records are of recent origin. The parish register of Church Broughton in Derbyshire in the year 1767 carries an entry of an infant having 'two teeth cut when born', but possibly paediatric records are a more fruitful source of information. Even so, the condition could pass unnoticed if feeding were not affected and this may account for the divergence in the figures given.

Ballantyne (1896) was probably the first to make an estimate of the incidence - he found it to be 1 in 6,000. Bodenhoff (1959) in a more recent review of 186 reports in the literature and an investigation of 145 cases reported by Danish midwives and health visitors, places the incidence at at least 1 in 3,000 births. In Britain the incidence would appear to be in the region of 1 in every 2,000 live births.

Comparative anatomy: In the cow, sheep and goat, the lower deciduous incisors are normally erupted before birth and in the horse and pig both upper

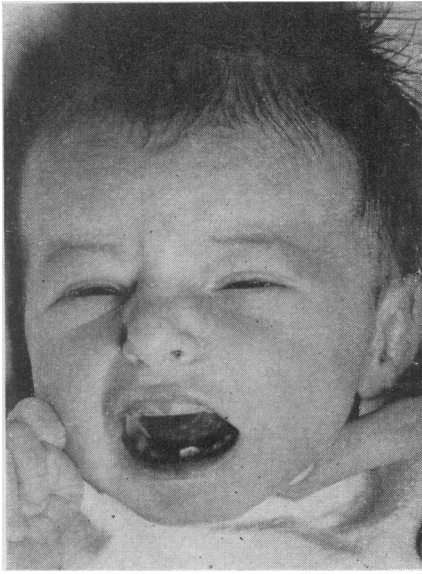


Fig 1 Child aged 5 days with natal tooth (\overline{JA})

and lower deciduous incisors appear either before birth or during the first few weeks of life (Ellenberger & Baum 1932).

Pre-deciduous teeth: In all the 12 cases from Sheffield, and in most of those in the world literature, the teeth were true deciduous teeth which had erupted prematurely, usually in the lower incisor region. There have, however, been four cases reported in the world literature of what are termed 'pre-deciduous teeth', usually in the lower deciduous molar region. For instance, Allwright (1958) reports upon a Chinese infant in whom, two weeks after birth there erupted in each lower deciduous molar region a small calcified nodule about the size of a grain of rice. They were quite loose and were extracted 10 days later. Neither had roots but the base of each was perforated like the apex of the root of a normal tooth. In their place the normal deciduous lower molars erupted at the usual time.

Clinical appearance: At birth natal teeth (Fig 1) usually appear to be perched upon a pad of soft tissue above gum level whereas the neonatal teeth are covered in a cap of gum tissue. As at this stage in their development only the crown would be formed these teeth are freely mobile and this might explain the inflamed appearance of the ragged tissue around the cervical region.

Histological appearance: Schröder & Moral (1918) studied decalcified sections of a natal tooth with gum tissue attached which had been excised on the eighth day, then stained with hæmatoxylin and eosin. They could not find a continuous enamel layer and they also reported some irregu-

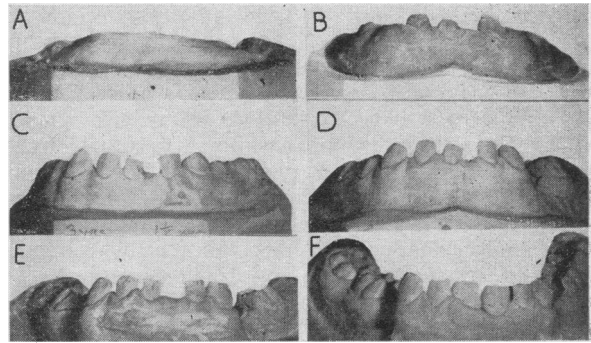


Fig 2 Models showing the closing of incisal space (measured between \overline{Bj} and \overline{B}) following the loss of \overline{JA} and also the opening of this space at 5 years. A, aged 4 months - 0 mm; B, aged 1½ years - 9 mm; C, aged 3 years - 7 mm; D, aged 5½ years - 7.5 mm; E, aged 6½ years - 8 mm; F, aged 7½ years - 12 mm

larity in the formation of the dentine near the amelodentinal junction with large interglobular spaces as also reported by Scheff (1911), Howkins (1932) and Hals (1957). Towards the cervical edge of the crown, Schröder & Moral (1918), Boyd & Miles (1951) and Hals (1957) all report finding cells in the dentine. Boyd & Miles give an excellent account of the supporting tissues, because in the case of their specimen, a stillborn foetus, they were able to section through the complete mandible. They point out that cells are sometimes included in human secondary dentine laid down in response to a sudden injury and suggest that possibly owing to the speed with which the dentine matrix was laid down in this natal tooth, cells or portions of the pulp become incorporated in it. In this connexion it is important to bear in mind that the base of a natal tooth is subject to trauma every time the child moves its tongue or lips, and these movements commence *in utero*, some time before birth. For instance, movements of the arms, legs and trunk have been observed in human foetuses as early as eight weeks after conception (Fitzgerald & Windle 1942). Swallowing would also seem to occur, for amniotic fluid and any dye introduced has been found later in the infant's gastrointestinal tract (Smith 1959). Béclard (1813) says 'On carefully opening the gravid uterus of a mammal one can clearly see . . . through the amniotic fluid the fetus making mechanical respiratory movements . . . accompanied by an opening of the mouth'.

When examining the pulpal tissue of a natal tooth, Schröder & Moral noticed a small number of hæmorrhages distributed throughout the pulp. This, and the vascularity of the pad of tissue at the base of the crown could possibly also be explained by the constant movement of the crown from tongue and lip pressure.

Ætiology: Over the years there have been many suggestions put forward for the cause of this condition, including hypovitaminosis, hormonal stimulation, febrile states, pyelitis and syphilis. One of the most likely suggestions in my own opinion and that of the more recent writers is the superficial positioning of the tooth germ. Boyd & Miles show this very clearly in their section of the foetal mandible. There the erupted deciduous centrals were lying, not in a crypt, but in a slight hollow on the surface of the alveolar bone, very much above the germ of their permanent successor.

Why is it that only the lower centrals are in this elevated position? The radiograph of the mandible in Boyd & Miles' paper shows the gap at the symphysis menti where osseous union is not complete until the first or second year after birth (Aitchison 1950); could it be that some anomaly in the symphysis could affect the positioning of the lower central incisor tooth germs in the newborn?

One ætiological factor which is more certain is heredity or familial tendencies. Gates (1946) states 'the condition is probably an irregular dominant, but the irregularity might be due to the presence of an inhibitor or to two genes being required'. Massler & Savara found that 10 out of the 24 cases reported in world literature had siblings or parents with the same condition. Coleman (1914) reports an infant with natal teeth whose sister and father were also born with two lower incisors erupted. Rosenhaupt (1911) described a family in which the eldest son had one natal tooth and the third son three. The children of this latter son had teeth erupting in their second month. Asana (1921) in India reported natal teeth in two children of the same father by different wives. Of the 12 cases in Sheffield, 3 gave a definite family history of natal or neonatal teeth and 4 of the 7 cases reported from the Leeds University Child Health Department gave a definite family history of this condition.

Treatment: The reason often given for extracting these natal teeth is that they may become progressively looser and may be swallowed or aspirated, but as yet no such complication has been reported. A more obvious reason for their removal is ulceration of the undersurface of the tongue as reported by Blaschko (1855). Difficulty in feeding or injury to the mother's nipple is yet another obvious reason for removing these teeth. If neither of these conditions present and the teeth are left to develop then they may even last to the age of 20 (Kennedy 1924).

Magitot (1883) described one case where excessive hæmorrhage followed extraction and proved fatal, but, in reviewing this later,

Ballantyne suspected that some condition such as hæmophilia could have been present. Despite the hypoprothrombinæmia in the newborn infant, no other case of excessive hæmorrhage has been reported. Allwright (1958) states that in Hong Kong he extracted 25 natal and neonatal teeth from a total of 15 infants without any special precautions to control bleeding. Similarly in 4 of the 12 Sheffield cases, teeth were extracted without complications ensuing.

Follow-up experience: Of the 8 Sheffield infants who did not have teeth extracted soon after birth, 2 infants shed their natal teeth within a few days and 2 infants at about 3 months. The rest grew as normal teeth until the usual 5½ to 6 years of age when they were shed naturally in 2 cases, but in 1 further case they persisted and had to be extracted to avoid displacing $\overline{11}$ and in yet another case they persisted due to the absence of $\overline{11}$.

My fear when I heard of these lower incisors being extracted at birth and saw the resultant space closing, especially when assisted by thumb-sucking activity, was that the lower arch would collapse and there would be insufficient room for the succeeding teeth. This, of course, happens frequently in the deciduous molar region. But despite the space closing initially, at about 5-5½ years of age it began to open again (Fig. 2). In none of the 9 cases where permanent lower incisors have appeared have these been crowded.

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